General

Guideline Title

Pregnancy and breast cancer.

Bibliographic Source(s)

Royal College of Obstetricians and Gynaecologists (RCOG). Pregnancy and breast cancer. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2011 Mar. 15 p. (Green-top guideline; no. 12). [85 references]

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: Royal College of Obstetricians and Gynaecologists (RCOG). Pregnancy and breast cancer. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2004 Jan. 7 p. (Guideline; no. 12).

Recommendations

Major Recommendations

In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the original guideline document.

Classification of evidence levels (1++ to 4) and grades of recommendations (A-D) are defined at the end of the "Major Recommendations" field.

What Is the Optimal Management of Breast Cancer Diagnosed During Pregnancy?

Treatment During Pregnancy

D - Tamoxifen and trastuzumab are contraindicated in pregnancy and should not be used.

Haemopoietic growth factors (granulocyte colony-stimulating factor) may be employed to ameliorate chemotherapy-induced neutropenia and have been used extensively in haematological malignancy; their use is recommended to minimise potential maternal and fetal problems associated with neutropenia. Use of these and other drugs should be discussed with the obstetrician. [Evidence Level 3]

What Advice Should Be Given to Women Planning Pregnancy Following Breast Cancer?

Impact of Pregnancy on Risk of Recurrence

C - Women can be reassured that long-term survival after breast cancer is not adversely affected by pregnancy.

Outcome of Pregnancy

D - Women can be reassured concerning the risk of malformation in children conceived after treatment for breast cancer.

The heritability of breast cancer is a source of anxiety but does not affect childhood health. Women who are known to be breast cancer gene (BRCA) carriers may wish to consider preimplantation genetic diagnosis, which is now available in the United Kingdom (UK). However, some young women with a family history indicative of genetic risk may not wish to undergo testing so as not to compromise their decisions regarding having a family.

What Is the Optimal Management of Pregnancy Following Treatment for Breast Cancer?

D - Echocardiography should be performed during pregnancy in women at risk to detect cardiomyopathy through resting left ventricular ejection fraction or echocardiographic fractional shortening.

During pregnancy, a breast treated by surgery/radiotherapy may not undergo hormonal change and the woman may require a temporary prosthesis. If breast imaging is needed, ultrasound (performed through the breast multidisciplinary team) is preferred. Metastatic relapse may be harder to detect and common complaints in pregnancy such as backache can be difficult to assess.

The supervision of pregnancy after breast cancer should be consultant led, but midwifery involvement will help to normalise care.

What Is the Effect of Breast Cancer Treatment on the Woman's Fertility?

Can Fertility Be Preserved Before Treatment?

Cryopreservation

D - There are insufficient data to support ovarian tissue storage for fertility preservation in women with breast cancer; this should be offered only in the context of a research trial.

Definitions:

Grades of Recommendations

A- At least one meta-analysis, systematic review or randomised controlled trial rated as 1++, and directly applicable to the target population; *or*

A systematic review of randomised controlled trials or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population and demonstrating overall consistency of results.

B - A body of evidence including studies rated as 2++ directly applicable to the target population, and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 1++ or 1+

C - A body of evidence including studies rated as 2+ directly applicable to the target population and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 2++

D - Evidence level 3 or 4; *or*

Extrapolated evidence from studies rated as 2+

Good Practice Point - Recommended best practice based on the clinical experience of the guideline development group

Classification of Evidence Levels

1++ High-quality meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a very low risk of bias

1+ Well-conducted meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a low risk of bias

1– Meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a high risk of bias

2++ High-quality systematic reviews of case–control or cohort studies or high-quality case–control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal

2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal

2– Case–control or cohort studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal

3 Non-analytical studies, e.g., case reports, case series

4 Expert opinion

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Pregnancy and breast cancer

Guideline Category

Management

Risk Assessment

Treatment

Clinical Specialty

Family Practice

Internal Medicine

Nursing

Obstetrics and Gynecology

Oncology

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To provide clinical guidance to health professionals caring for women of childbearing age with a diagnosis or history of breast cancer

Target Population

Women of childbearing age with a diagnosis or history of breast cancer

Interventions and Practices Considered

1. Multidisciplinary management of breast cancer patients during pregnancy
2. Counseling women on expected outcomes for themselves and their babies
3. Echocardiography for women at risk of cardiomyopathy from prior treatment for breast cancer
4. Treatment of breast cancer during pregnancy
5. Avoidance of tamoxifen and trastuzumab in pregnancy

Note: Ovarian tissue storage for fertility preservation was considered but there was insufficient data for a recommendation.

Major Outcomes Considered

- Incidence of breast cancer during pregnancy
- Risk of breast cancer recurrence following pregnancy
- Survival rates following breast cancer during or before pregnancy
- Fetal outcome following maternal breast cancer treatment
- Fertility following ovarian cortex or ovary regrafting

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

This guideline was developed in accordance with standard methodology for producing Royal College of Obstetricians and Gynaecologists (RCOG) Green-top guidelines (see the "Availability of Companion Documents" field). Medline, PubMed, all EBM reviews (Cochrane Central Register of Controlled Trials [CRCT], Cochrane Database of Systematic Reviews, Methodology register, ACP Journal Club, Database of Abstracts of Reviews and Effects [DARE], HTA, Maternity and Infant Care), EMBASE and TRIP were searched for relevant randomised controlled trials, systematic reviews and meta-analyses, cohort studies and case studies. The search was restricted to articles published between 2002 and December 2009, updated from the original search for the previous edition. The search terms included were: 'breast neoplasms', 'breast cancer', 'pregnancy', 'pregnancy complications', 'breast cancer and fertility', 'mastectomy', 'breastfeeding', 'lactation', 'contraception', 'fertility' and 'infertility'. Abstracts were used to identify key articles. The National Library for Health and the National Guideline Clearinghouse were searched for relevant guidelines.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Classification of Evidence Levels

1++ High-quality meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a very low risk of bias

1+ Well-conducted meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a low risk of bias

1– Meta-analyses, systematic reviews of randomised controlled trials or randomised controlled trials with a high risk of bias

2++ High-quality systematic reviews of case–control or cohort studies or high-quality case–control or cohort studies with a very low risk of confounding, bias or chance and a high probability that the relationship is causal

2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal

2– Case–control or cohort studies with a high risk of confounding, bias or chance and a significant risk that the relationship is not causal

3 Non-analytical studies, e.g., case reports, case series

4 Expert opinion

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Reviewing and Grading of Evidence

Once the evidence has been collated for each clinical question it needs to be appraised and reviewed (refer to section 3 in "Development of RCOG Green-top guidelines: producing a clinical practice guideline" for information on the formulation of the clinical questions; see the "Availability of Companion Documents" field). For each question, the study type with least chance of bias should be used. If available, randomised controlled trials (RCTs) of suitable size and quality should be used in preference to observational data. This may vary depending on the outcome being examined.

The level of evidence and the grade of the recommendations used in this guideline originate from the guidance by the Scottish Intercollegiate Guidelines Network (SIGN) Grading Review Group, which incorporates formal assessment of the methodological quality, quantity, consistency, and applicability of the evidence base. The methods used to appraise individual study types are available from the SIGN Web site (www.sign.ac.uk/methodology/checklists.html). An objective appraisal of study quality is essential, but paired reviewing by guideline leads may be impractical because of resource constraints.

Once evidence has been collated and appraised, it can be graded. A judgement on the quality of the evidence will be necessary using the grading system (see the "Rating Scheme for the Strength of the Evidence" field). Where evidence is felt to warrant 'down-grading', for whatever reason, the rationale must be stated. Evidence judged to be of poor quality can be excluded. Any study with a high chance of bias (either 1– or 2–) will be excluded from the guideline and recommendations will not be based on this evidence. This prevents recommendations being based on poor-quality RCTs when higher-quality observational evidence is available.

Methods Used to Formulate the Recommendations

Expert Consensus

Informal Consensus

Description of Methods Used to Formulate the Recommendations

Guideline Development

The development of guidelines involves more than the collation and reviewing of evidence. Even with high-quality data from systematic reviews of

randomised controlled trials, a value judgement is needed when comparing one therapy with another. This will therefore introduce the need for consensus.

Royal College of Obstetricians and Gynaecologists (RCOG) Green-top guidelines are drafted by nominated developers, in contrast to other guideline groups such as the National Institute for Health and Clinical Excellence (NICE) and the Scottish Intercollegiate Guidelines Network (SIGN), who use larger guideline development groups. Equally, in contrast to other guideline groups, the topics chosen for development as Green-top guidelines are concise enough to allow development by a smaller group of individuals.

In agreeing the precise wording of evidence-based guideline recommendations and in developing consensus-based 'good practice points', the Guidelines Committee (GC) will employ an informal consensus approach through group discussion. In line with current methodologies, the entire development process will follow strict guidance and be both transparent and robust. The RCOG acknowledges that formal consensus methods have been described, but these require further evaluation in the context of clinical guideline development. It is envisaged that this will not detract from the rigor of the process but prevent undue delays in development.

Rating Scheme for the Strength of the Recommendations

Grades of Recommendations

A - At least one meta-analysis, systematic review or randomised controlled trial rated as 1++, and directly applicable to the target population; *or*

A systematic review of randomised controlled trials or a body of evidence consisting principally of studies rated as 1+, directly applicable to the target population and demonstrating overall consistency of results.

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Extrapolated evidence from studies rated as 1++ or 1+

C - A body of evidence including studies rated as 2+ directly applicable to the target population and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 2++

D - Evidence level 3 or 4; *or*

Extrapolated evidence from studies rated as 2+

Good Practice Point - Recommended best practice based on the clinical experience of the guideline development group

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Following discussion in the Guidelines Committee (GC), each Green-top guideline is formally peer reviewed. At the same time, the draft guideline is published on the Royal College of Obstetricians and Gynaecologists (RCOG) Web site for further peer discussion before final publication.

All comments will be collated by the RCOG and tabulated for consideration by the guideline leads. Each comment will require discussion. Where comments are rejected then justification will need to be made. Following this review, the document will be updated and the GC will then review the revised draft and the table of comments.

Once the GC signs-off on the guideline, it is submitted to the Standards Board for approval before final publication.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for selected recommendations (see the "Major Recommendations" field).

In contrast to the extensive literature on treatment of breast cancer, there is no level 1 evidence on pregnancy and breast cancer. There are some well-designed observational studies. Thus, recommendations for practice are limited to grade C/D but, where possible, recommendations are based on, and explicitly linked to, the evidence that supports them. Areas lacking evidence are highlighted and annotated in the original guideline document as 'good practice points'.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Appropriate management of pregnancy in women with or following breast cancer and minimisation of risk of cancer recurrence or fetal abnormality

Potential Harms

None stated

Contraindications

Contraindications

- Radiotherapy is contraindicated until delivery unless it is life saving or to preserve organ function (e.g., spinal cord compression).
- Systemic chemotherapy is contraindicated in the first trimester because of a high rate of fetal abnormality, but is safe from the second trimester and should be offered according to protocols defined by the risk of breast cancer relapse and mortality.
- Hormonal contraception is contraindicated in women with current or recent breast cancer (World Health Organization/UK medical eligibility category 4).
- Tamoxifen and trastuzumab are contraindicated in pregnancy and should not be used.

Qualifying Statements

Qualifying Statements

The Royal College of Obstetricians and Gynaecologists (RCOG) produces guidelines as an educational aid to good clinical practice. They present recognised methods and techniques of clinical practice, based on published evidence, for consideration by obstetricians and gynaecologists and other relevant health professionals. The ultimate judgement regarding a particular clinical procedure or treatment plan must be made by the doctor or other attendant in the light of clinical data presented by the patient and the diagnostic and treatment options available. This means that RCOG guidelines are unlike protocols or guidelines issued by employers, as they are not intended to be prescriptive directions defining a single course of management. Departure from the local prescriptive protocols or guidelines should be fully documented in the patient's case notes at the time the relevant decision is taken.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Audit Criteria/Indicators

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Living with Illness

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2004 Jan (revised 2011 Mar)

Guideline Developer(s)

Royal College of Obstetricians and Gynaecologists - Medical Specialty Society

Source(s) of Funding

Royal College of Obstetricians and Gynaecologists

Guideline Committee

Guidelines Committee

Composition of Group That Authored the Guideline

Authors: Ms MC Davies FRCOG, London; Dr AL Jones, UCLH Foundation Trust, Cancer Management, London

Committee Members: Association of Breast Surgery; British Maternal and Fetal Medicine Society; Breast Cancer Care; RCOG Consumers' Forum; Professor JM Dixon, Professor of Surgery and Consultant Surgeon, Western General Hospital, Edinburgh, Scotland; Dr AHD Diyaf MRCOG, Birmingham; Dr A Francis, Consultant Breast Surgeon, University Hospital Birmingham; Professor AB MacLean FRCOG, London; Professor J Lansac FRCOG, France; Professor P Sauven, Professor of Surgical Oncology, Broomfield Hospital, Chelmsford, UK

Committee Lead Peer Reviewers: Dr K Harding FRCOG, London; Dr NA Siddiqui FRCOG, Glasgow, Scotland

Financial Disclosures/Conflicts of Interest

None declared

Guideline Status

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Guideline Availability

Electronic copies: Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site .

Availability of Companion Documents

The following are available:

- Development of RCOG Green-top guidelines: policies and processes. Clinical Governance Advice No 1a. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2006 Nov. 6 p. Electronic copies: Available from the Royal College of Obstetricians and Gynaecologists (RCOG) Web site .
- Development of RCOG Green-top guidelines: producing a scope. Clinical Governance Advice No 1b. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2006 Nov. 4 p. Electronic copies: Available from the RCOG Web site .
- Development of RCOG Green-top guidelines: producing a clinical practice guideline. Clinical Governance Advice No 1c. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2006 Nov. 13 p. Electronic copies: Available from the RCOG Web site .
- Development of RCOG Green-top guidelines: consensus methods for adaptation of Green-top guidelines. Clinical Governance Advice No 1d. London (UK): Royal College of Obstetricians and Gynaecologists (RCOG); 2010 Feb. 9 p. Electronic copies: Available from the RCOG Web site .

In addition, suggested audit topics are available in section 10 of the original guideline document .

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI on October 17, 2005. This NGC summary was updated by ECRI Institute on January 26, 2012.

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